CIO Council
FY08 PBA Assessment
July 15, 2005

Introduction

The purpose of this CIO Council Assessment is to consolidate and prioritize the programmatic gaps and proposed solutions described in the FY2008 Program Baseline Assessments, based on societal needs and prospective impact. The central challenge of the Assessments is to evaluate the PBA's and identify the most urgent and compelling programmatic priorities for FY2008-FY2012, in light of recent external developments, progress to date, and the availability of creative, high-leverage solutions. The Council provided specific recommendations for enhancing the value and performance of the overall NOAA Programs in our area of responsibility—Information Technology.

Overview

The PBA's for the Mission Goal Programs are heavily oriented toward mission related products and services. Information technology is a means to acquire, analyze, store, disseminate, and archive the environmental data produced by NOAA's mission goal programs. In its review of the PBA's the CIO Council found limited discussion of specific IT capabilities or capacities or related gaps. However IT is implicit in nearly all of the PBA's in terms of a general requirement for data, applications, systems, networks, and data. The Council recommends ongoing communications and working sessions where technologies in support of the Programs can be further explored to ensure that our recommendations fully reflect the IT requirements of NOAA's mission and strategic goals. The Council also noted that there is a general absence of linkages to federal management initiatives such as the President's Management Agenda, and E-gov.

1. External Assessment

President's Management Agenda (PMA) and Electronic Government (E-Gov)

An outcome of the PPBES planning process should be a clear commitment for NOAA to fully align with the 24 national E-Gov initiatives. The objective of the PMA is to make the federal government more focused on

citizens and results, which includes internet-based technology to make it easy for citizens and businesses to with the government, save tax payer dollars, and streamline citizen-to-government communications. Several high-payoff initiatives to integrate agency operations and information technology investments have been identified. The goal of these initiatives is to eliminate redundant systems. Specifically, NOAA has a role in the following initiatives: 1) Recreation One-Stop, 2) E-Rulemaking, 3) Geo-Spatial One-Stop, 4) Disaster Management, 5) Grants.gov, and 6) Safecom. The CIO Council will seek to work with PPI and PA&E to further educate NOAA programs on our PMA/E-gov implementation plans.

2. Cross-cutting Capability and Capacity Assessment

Climate Observations and Analysis

The Observation and Analysis program has identified scientific data stewardship and integrated data management as a shortfall. The Council endorses particularly in the Climate Mission Goal, data management capacities that provide for comprehensive end-to-end data processing including movement of data and information from the observing system sensors to the data user. These processes include acquisition, quality control, metadata cataloging, validation, reprocessing, storage, retrieval, dissemination, and archival of data.

Science, Technology, and Infusion

The Council endorses the One NOAA Information System vision identified in the WW Science, Technology and Infusion Program. Proposed funding stream of FY07/$7m, FY08/$20m, and FY09/$30m is considered un-executable and unattainable. The CIO Council recommends adjustment for a more phased implementation.

Aviation Weather

The Aviation Weather program identified a major gap in the capabilities of various NOAA organizations to produce consistent and relevant weather information required by National Airspace System decision makers. As indicated in the program gap discussion, decentralized production and development of aviation centric products and services internal to NOAA has historically limited reduction of socioeconomic inefficiencies. Products and services delivered by various sub elements of NOAA that are relied upon heavily by the Aviation Industry for operational use have not been addressed

holistically. The Aviation weather program needs to leverage existing consolidation in place and give consideration to High Performance Computing resources within our new operating strategies consistent with the Environmental Modeling Program. Council recommends EMP work with the AWx program to develop a strategy for leveraging HPC for consistent products.

C&T Emergency Response

The Council noted that NOAA's emergency incident response IT needs are often limited to the equipment available in the Incident Command Post (ICP). ICPs are frequently established in hotel conference rooms near the incident site and lack necessary minimum IT requirements. NOAA staff would benefit from enhanced network connectivity (to the web, and others in the ICP). NOAA's response community would benefit from a maintained ready-to-go IT kit that would include a network router, laptops with preinstalled wireless network cards, a color printer, fax machine, etc. The CIO Council endorses further analysis of this gap with emphasis on conducting a requirements analysis of critical emergency response functions.

Further this identifies a gap in the NOAAnet requirements. The C&T Emergency Response IT requirements should be a part of the wireless and satellite networking capability of NOAAnet, to meet broader NOAA needs.

One-NOAA Web Presence

The NOAA Headquarters program PBA identified the priority of creating an Office of Communications. The CIO Council recommends NOAA should pursue a strategy of projecting a One-NOAA branding on all public communications through our web pages. It will convey the message that all mission goals, programs, organizations, functions, and capabilities are produced and delivered as one NOAA team.

NOAA’s Web presence has emerged as a technology that communicates the science of NOAA to a global community. A successful Web presence is critical to supporting NOAA mission goals, because it can deliver the science of NOAA in a real-time interactive environment that accesses NOAA’s vast information, products, and services.

A major capacity gap lies in our inability to use the web as a forum for communicating as One-NOAA and effectively propagating the NOAA brand. The One-NOAA Web Presence should address our internal and

external Web communications by aligning our information resources, reducing content duplication, and effectively targeting audiences, while supporting scientific endeavors and business processes. Synchronizing science, business and technology through the delivery of accurate and timely information provides the greatest value to NOAA's internal and external customers.

In the coming years, an increased investment in NOAA's Web presence will allow NOAA to achieve an effective Web infrastructure and governance process that cuts across organization and programmatic lines. NOAA should be poised to use advances in technology to enhance and sustain a robust and feature-rich environment of world-class Web communications.

End to End Resource Management and Management Information System

The Financial Services sub-program of the Mission Support Goal identified the capability to provide an end to end resource management information system for the PPBES process. The Council believes that the E2E system would provide a single common set of corporate data supporting all four phases of the PPBES process, and provide information by the goal program structure. The development and implementation of an Enterprise level management information system for NOAA would, leveraging ongoing activities, pull together the critical decision support information NOAA needs in supporting its mission

Wireless Networking

The CIO Council noted an absence of discussion of capacity with regard to wireless networks. The Programs need to further identify in their PBA's capacities and requirements relative to wireless networks and to allow for a standard and secure implementation.

3. NOAA Strategic IT Direction

NOAANet

A major capacity gap in the ability of NOAA's programs to accomplish outcomes is the absence of a single NOAA network. The CIO Council is planning for one NOAA network for all major programs and systems by

FY08. The NOAA programs should plan accordingly and PPBES programming should reflect this.

NOAA's current network infrastructure comprises 12 legacy wide-area-networks often developed to support programmatic needs. In addition generic communications between locations and offices often traverses the commodity Internet or the research Internet2. Public information services are provided over servers at over 14 locations. Most servers are not mirrored at other locations.

NOAAnet will incorporate existing data and video requirements into a single infrastructure that will enhance and leverage Metropolitan Area Networks (MAN), assuring diverse access into major locations. The underlying network technology MPLS (Multi Protocol Label Switch), supports any-to-any communications, while providing isolation as required to support differing security and performance requirements. Economies of scale through use of MANs and aggregating local access where possible will provide cost avoidance that will allow NOAA to improve network management and meet demand for increased capacity more economically.

Under NOAAnet, NOAA will have fewer Internet access points, improving security management and the reliability of service provided to the public. Through greater use of automated tools and managed network services from the provider, the extent and scope of network management will be extended to more remote locations.

Over the next seven years there are several major drivers that will increase the use and capacity requirements of the NOAA network infrastructure:

- Increased density of weather models
- Two to tree order of magnitude increase in the volume of Satellite Data under NPOES and GOES R
- Geographically dispersed use and back up of NOAA's research high performance computers.
- Continuity of Government Operations Requirements that necessitate operation of information services and collaborative services at geographically dispersed locations.
- Greater use of collaborative real time technologies such as web conferencing, video conferencing, video streaming, and file sharing.

IT Security

Successful IT Security is critical to achieving NOAA outcomes. In NOAA IT Security policies are developed centrally through the Information Technology Security Committee and the CIO Council. The policies are implemented in a decentralize manner through the IT Security Officers within the Line Offices. In NOAA IT Security is focused on policy, and implementation on an enterprise level. It is the responsibility of the Programs to specifically identify IT security capacity gaps.

All IT investments, programs, processes, applications, and systems should have security as a top priority. All applications and Web pages should be subject to review by competent security engineers and applicable certification and accreditation processes before being placed into production. Once systems are in production, implementation of configuration management, vulnerability management, recurring training and periodic security reviews are among the activities essential to sustaining the security posture of accredited systems. IT security processes should be developed and updated to ensure consistent application of security controls and policies throughout NOAA.

Security considerations must be embedded in all phases of a system's life, from concept initiation through operations and decommissioning. The requirements for process, expertise and technology are well-defined in Department of Commerce direction and industry practice. NOAA needs to incorporate and fully fund these requirements in all activities which employ information technology or result in information products or services.

Gaps should be addressed within the Programs to ensure consistent application of security controls and associated testing and policies. Required resources for administration, Certification and Accreditation, patch management, and other functions must be identified throughout all NOAA Mission Goals, Programs, Line Offices systems, and applications. The end result will be a more consistent and strengthened IT security environment for NOAA systems.

Integrated Data Management

The Global Earth Observing Integrated Data Environment (GEO IDE) should be considered the mechanism by which NOAA will identify and address integration gaps in data management systems; create interoperability across existing data management systems; develop and adopt data standards

for formats and terminology, and integrate measurements, data, and products. Crucial to the success of NOAA's portion of the Global Earth Observing Systems of Systems (GEOSS), GEO IDE will involve NOAA scientists and data systems managers in assessing requirements and systems and to develop 1) an enterprise architecture for data management and execution plan, and 2) a data standardizations approach and standard syntaxes, semantics, formats, and process for agreement.

GEO IDE will develop work packages to be incrementally executed by accountable project managers, including developing interoperability mechanisms, e.g., translators and directory services, and it will direct, test and evaluated changes being made to data management systems by their respective owners. The NOAA CIO and NOAA Observing Systems Council will oversee GEO IDE execution and ensure compliance across NOAA with the enterprise architecture and execution plan.

Common Services

NOAA will implement and deploy appropriate federal-wide solutions first. In the absence of a federal solution NOAA will deploy a DOC-wide solution, in the absence of a DOC solution NOAA will deploy a NOAA-wide solution. Mission or Line office specific solutions must be integrated with other solutions or technologies where possible and leverage available capability where possible.

For example with regard to archiving, the CIO Council recommends he Comprehensive Large Array data Stewardship System (CLASS) should be considered the prime NOAA IT system in which all NOAA's current and future large array environmental data sets will reside. CLASS is designed to permanently, efficiently, cost-effectively, and securely ingest, store, preserve, and provide access to the Nation's ever-increasing volume of environmental data and information. The primary data sets CLASS will ingest, archive, and distribute are: POES, GOES, NPOESS, NPP, NASA-EOS, NEXRAD, METOP, DMSP, and In-Situ-Data.

Programs that require additional data, applications and/or data management should ensure that data quality, security and integration issues are sufficiently addressed. Consideration should be given to using exiting NOAA resources and systems, such as CLASS, for meeting data management needs. If existing data resources are not available and new data

collections and systems are developed, they should be integrated with other existing and/or planned NOAA data systems.

4. Comments on the draft FY08 AGM

- Under the Overview: NOAA-wide priorities (page 5 of the draft) replace "High performance information systems" with "High data availability and integrity, and high system interoperability and integration." Replace "High quality, low-cost data and information services; operational efficiency" with "Improved efficiency and effectiveness of information systems."
- Under the "Breakthrough Organizational Performance" (page 9 of the draft) replace the 4th bullet with "Full and seamless integration of data and information across all elements of NOAA's programs.
- Under the "Breakthrough Organizational Performance: priorities, products and partners" (page 10 of the draft) replace "Leverage information technology" with "Strategic use of Information Technology." Replace "Higher quality, lower cost data and information services for external customers with", "Deployed a single NOAA network that supports the data flow, products, and services of mission essential systems required to meet national essential functions assigned to NOAA. Replace "Deployed and (sic) effective Management Information System for corporate NOAA", with "developed a strategy for implementation of a NOAA integrated data management system of systems addressing NOAA-wide data management requirements and issues of data assimilation and data extraction." Replace "DOC ICIO" with "DOC OCIO."